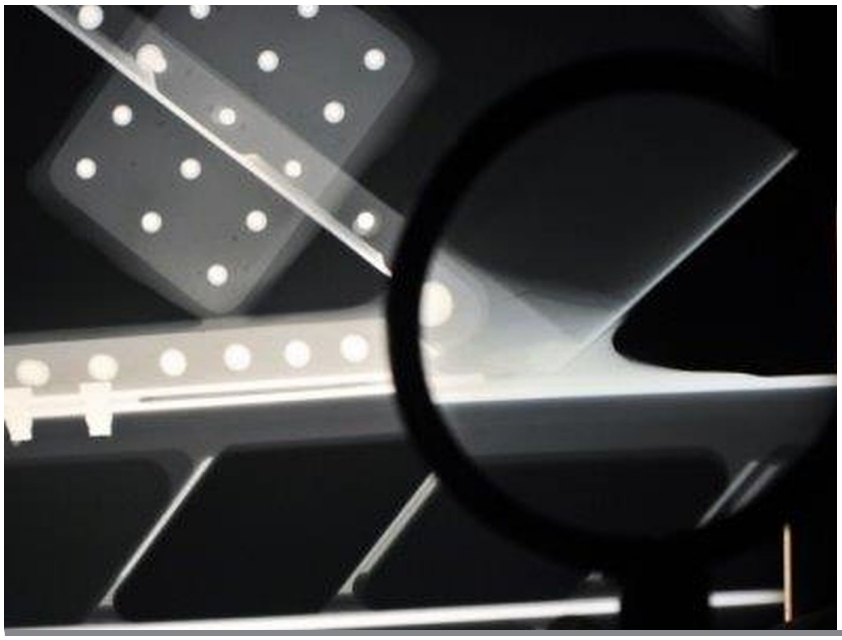


National Aeronautics and Space Administration

TECHNOLOGY SOLUTION

Sensors

Scintillating Quantum Dots for Imaging X-rays (SQDIX) for Aircraft Inspection

A revolutionary system that enables characterization of microcracking in composites or x-ray inspection of in-service turbine engines

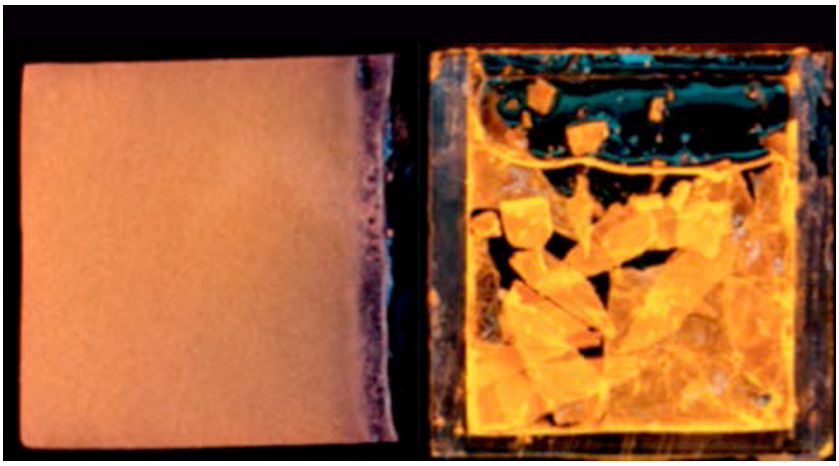
NASAs Langley Research Center has developed Scintillating Quantum Dots for Imaging X-rays (SQDIX) technology that enables the creation of x-ray detectors that are more sensitive than current x-ray detectors. In addition to superior sensitivity, SQDIX also offers the promise of reducing the cost of x-ray detectors by at least by a factor of 10. Simply stated, SQDIX has the potential to change the way that x-ray detection is done.

BENEFITS

- Enables very high-speed x-ray imaging.
- Environmentally friendly in comparison with conventional scintillator materials.
- Minimizes x-ray exposure to the patient in medical imaging applications, and also the time required for exposure to ionizing radiation. Combined with reduced cost, this could make some previously cost-prohibitive forms of medical x-ray imaging more widely available.

THE TECHNOLOGY

The SQDIX system is an enabling technology that will have game-changing impacts across many fields including DoE, DoD, NASA, medical imaging fields, aircraft inspection and many other fields. StQDs are sensitive to x-ray radiation and emit visible photons that are tunable in wavelength. Development of this technology will greatly impact NASAs ability to use X-Rays as an inspection method. This directly addresses the Aviation Safety challenge in the 2010 National Aeronautics R&D Plan to monitor and assess the health of aircraft more efficiently and effectively as well as all NASA spaceflights beyond earths magnetic field.



StQD polymers under UV excitation

APPLICATIONS

The technology has several potential applications:

- Aircraft inspection
- Medical imaging

PUBLICATIONS

Patent No: 9,651,682

More Information

National Aeronautics and Space Administration

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